Key Bridge White Space Channel Calculator

White Space channel availability is determined by the inquiring device's location, type and configuration. A Key Bridge White Space channel availability calculator demonstration is located within the Demonstration Showcase section of the Key Bridge White Space System API, Tools & Developer Resources portal (sign in required) at.

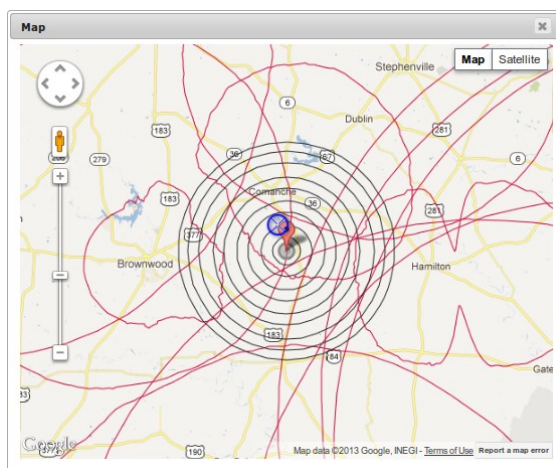https://api.keybridgeglobal.com/api/demo/whitespace/index.xhtml

This utility demonstrates the Key Bridge White Space System channel availability calculator engine and provides a convenient summary view of the various calculation permutations.

How The Utility It Works

White Space channel availability is calculated according to the geographic separation between an inquiring unlicensed White Space device (WSD) and licensed or protected wireless service areas. For operation within the United States a television channel is considered available for unlicensed White Space operation if the inquiring device (plus any separation buffer) is not within a protected wireless service area. WSDs require a supplemental separation buffer whose distance depends upon the WSD type (e.g. FIXED versus MODE-II Access Points), installation location and antenna configuration.

The Key Bridge White Space System incorporates all of these variables when calculating White Space channel availability as follows:

1. Co-channel and adjacent channel buffered geometries are calculated around the inquiring WSD geographic location.

2. Protected wireless service areas intersecting the buffered query geometry are identified.

3. The co- and adjacent channel White Space channel availability is calculated from the list of intersecting protected wireless service areas.

A single White Space channel availability calculation requires many input variables, which is simple for automated software but can be difficult for users wishing to browse, evaluate and survey White Space channel availability or to study what-if scenarios. The White Space Channel Calculator utility solves this problem by evaluating and presenting results for all available permutations at a location of interest.

How To Read the Results Map

The Key Bridge White Space Channel Calculator tool provides a convenient interface to review White Space channel availability options across all possible combinations of device and configuration.

When you click the Calculate button the map display is automatically updated to display a number of useful details.

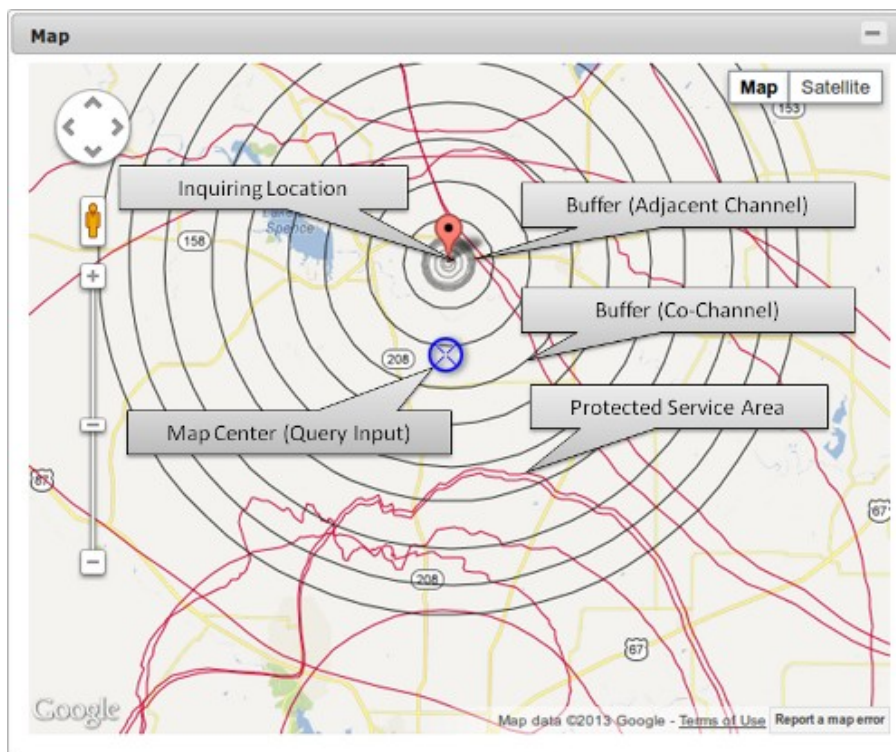These include:

- **The Inquiring Location**
  A RED marker is placed on the map to mark the inquiring location.

- **WSD Query Buffers**
  All supplementary geographic separation buffers are plotted to illustrate the total geographic area that must be considered. Co-channel buffers are plotted in BLACK while adjacent-channel buffers are plotted in GREY. These buffers appear as concentric circles around the inquiring location.

- **Protected Wireless Services**
  All protected wireless service areas are plotted that intersect any of the WSD Query Buffers and could possibly affect unlicensed channel availability at the inquiring location. These areas are plotted on the map in RED.

How To Read the Results Table

When you click the Calculate button a table of White Space Channel Availability Results is displayed. The table shows unlicensed channel availability according to the device configuration described in the column header, with separate antenna configurations for FIXED type devices and maximum power allowances for MODE-II type unlicensed devices.

White Space Channel Availability Results Summary

Calculated for [31.743324, -98.5625] (WGS_84)

CH	FIXED									MODE II		LPAUX
	<3	3-10	10-30	30-50	50-75	75-100	100-250	250-200	200-250	100	40	
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
3	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
4	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
5	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
7	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
8	✓	✓	✓	✓	✓	✓	✓	✗	✗	⊘	⊘	✓
9	✓	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
10	✓	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
11	✓	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
12	✓	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
13	✓	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
14	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
15	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
16	✗	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
17	✗	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✗
18	✗	✗	✗	✗	✗	✗	✗	✗	✗	⊘	⊘	✓
19	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	⊘	⊘	✓
46	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
47	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓
48	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
49	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓
50	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓
51	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓

Key

✓ Allowed ✗ Not Allowed ⊘ Forbidden By Rule ⊕ LPAUX Reserved — No information

CH A 6 Mhz channel as defined within the United States CFR.

FIXED Fixed WSD Access Point availability is calculated for an antenna HAAT range.
e.g. '**10-30**' indicates an antenna Height Above Average Terrain between 10 and 30 meters.

MODE-II Mode II WSD Access Points may transmit up to 100 mW on unoccupied channels and up to 40 mW on adjacent channels.

LPAUX Wireless Microphones may operate on adjacent and the two reserved channels.

How To Print the Results Table

The White Space Channel Availability Results Summary table relies upon a perhaps too-clever trick to display the various graphical icons and these icons do not normally appear when the page is printed.

To print the table you must configure your web browser to print background images as follows:

- **Internet Explorer**
  On the Tools menu, click Internet Options, and then click the Advanced tab. In the Settings box, under Printing, click to select the Print background colors and images check box, and then click OK.

- **Firefox & Chrome**
  Go to File => Page Setup. Select the check box for "Print Background (colors & images)".

- **Safari**
  In the print dialog select the 'Print backgrounds' check box.